National Aeronautics and Space Administration

NASA's Impact in Arkansas: A Tech Transfer Perspective

You know that NASA studies our planet, our sun, the solar system, and the Universe.
But did you know about the space program's economic impact here on Earth?

In 2011, NASA invested over **$2 million** in the state of Arkansas.

Since 2001, NASA's SBIR/STTR Program has invested nearly
$4.5 million in **6 Arkansas companies**
and more than **$1.2 billion** nationwide.

How NASA's SBIR/STTR Program Benefits Arkansas

NASA is committed to moving technologies and innovations into the mainstream of the U.S. economy, and the Small Business Innovation Research/Small Business Technology Transfer (SBIR/STTR) program helps fulfill this goal.

SBIR/STTR stimulates technological innovation by encouraging small, high-tech companies—particularly minority and disadvantaged businesses—to partner with NASA to help meet its research and development needs in key technology areas. At the same time, this program strengthens small companies by enabling them to bring cutting-edge new products into the U.S. economy.

The list to the right highlights Arkansas businesses that received SBIR/STTR contracts from NASA since 2001. **(Visit http://sbir.nasa.gov for more information on the SBIR/STTR program.)**

NASA SBIR/STTR Companies in Arkansas

Arkansas Power Electronics International, Inc. .....Fayetteville

Poly Adaptive, LLC .....Little Rock

Power Electronics Leveling Solutions, LLC .....Fayetteville

SFC Fluidics, LLC .....Fayetteville

Space Photonics, Inc. .....Fayetteville

Virtual Incubation Company, LLC .....Fayetteville

arkansas

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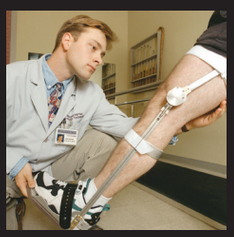
How NASA Spinoffs Benefit Arkansas



Lockable Knee Brace Speeds Rehabilitation *(Little Rock)*

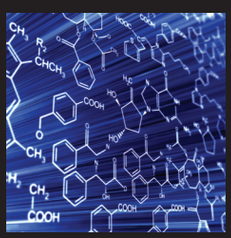
The same mechanical design skill that made its way into the plans for NASA's rocket engines and advanced propulsion also worked its way into the design of an orthotic knee joint that is changing the lives of people with weakened quadriceps. Horton's Orthotic & Prosthetic Lab licensed NASA's lockable joint with a hinge brake and applied the design concept to a new type of orthotic knee that automatically unlocks during the swinging phase of walking, but then becomes stable upon heel strike. The selectively lockable knee brace facilitates faster, less painful rehabilitation by allowing movement of the knee.

Horton spent seven years perfecting the design of the knee joint. The orthotic has helped thousands of patients with weak or absent quadriceps and varying degrees of knee instability caused by polio, spinal cord injuries, and other conditions.

Computer Modeling Accelerates Design and Development Cycle *(Benton)*

NASA facilities and expertise helped an Arkansas company rapidly bring to market an advanced impeller blade for use in marine vessels, including fishing boats, fire boats, houseboats, and excursion boats. NASA conducted advanced computational fluid dynamics research and created a three-dimensional computer model of the impeller. This research helped NAMJet recognize that their current design could not provide the desired propulsive performance.

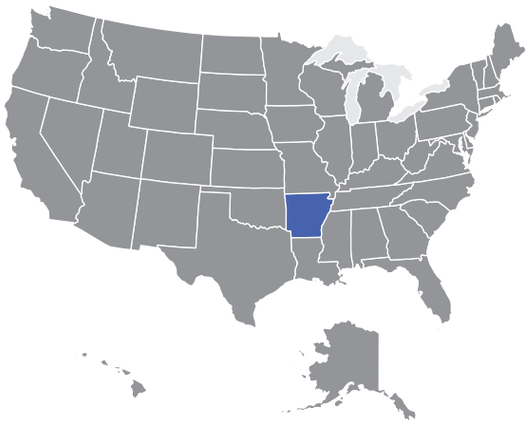
With help from NASA, NAMJet modified the design and conducted a second analysis, which indicated that the redesigned impeller would meet or exceed the company's specifications. NASA then constructed a solid polycarbonate model of the modified system, and NAMJet was able to cast a metal prototype directly from the ceramic mold. NASA's rapid prototyping program enabled NAMJet to save time, reduce costs, and bring their product to market more rapidly than would have been possible without NASA's assistance.



NASA Software Helps Chemists Identify Compounds *(Little Rock)*

Over the years, NASA has developed highly sophisticated computer software and supplied this software to U.S. businesses to help boost productivity. By taking advantage of this national resource, companies and academic institutions have saved significant time and money and gained access to highly sophisticated computer programs.

A professor and his students in the Chemistry Department at the University of Arkansas at Little Rock, in collaboration with Oak Ridge National Laboratory, relied on NASA's software for an artificial intelligence project. Using NASA's software as a framework, the group trained the computer to recognize certain pattern relationships in a known compound and associate the results to an unknown compound. This data, in turn, helped chemists identify mixtures of compounds without lengthy and costly separation procedures. Using a software program designed by NASA to mimic the human brain, these scientists helped pave the way for molecules and compounds to be designed on a computer.



NASA actively seeks partnerships with U.S. companies that can license NASA innovations and create "spinoffs" in areas such as health and medicine, consumer goods, transportation, renewable energy, and manufacturing. When businesses leverage NASA technologies to develop new products, it not only benefits the regional economy, but significantly strengthens the nation's competitiveness in the global marketplace.

NASA's centers across the country have helped 11 Arkansas companies develop revolutionary spinoff technologies.

Learn more about how NASA innovations benefit the public in *Spinoff*, an annual publication that highlights NASA's most significant technology transfer successes.
(Available at: http://www.sti.nasa.gov/tto)

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